August 30, 2013

Reviewer information:

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Global: The resolution or reproduction quality of many of the graphics should be improved so that all text is legible.

Global: It would be helpful if the report contained a chapter specifically evaluating management actions as put forth in the Biological Opinion (B.O.) designed to protect delta smelt. It would be helpful to include a description of "pre-B.O." management actions compared to "post-B.O." management actions. If possible, use data collected pre & post B.O.s to describe the effects management actions are having on protected species. It would be helpful to identify what has been learned since the implementation of the B.O.s, what hasn't been determined, and the next steps that could be taken to evaluate the effectiveness of management actions. Although not all of the management actions described in the B.O.s are required to be adaptively managed in real-time, synthesis and evaluation of management action over the past few years would benefit all stakeholders and would help ensure that management actions are updated to reflect the best available science to protect species.

Page 17 line 373: The history and management actions in the BOs should be described at this point. The reasonable and prudent actions required in those opinions are intended to protect delta smelt populations by altering water operations.

Page 29 lines 653-655: The report states *"[t]he analyses presented in this report are also based on hypotheses, but with the exception of the fall outflow manipulation, there are no other experimental manipulations to test these hypotheses"*. This report neglects the opportunity to evaluate the water operations changes that have occurred since implementing the biological opinions. The report should do more to include a description of management measures intended to protect species, actual measures implemented, linkages between observed biological data and management action if possible, and what could be improved in the future to better evaluate management actions.

Page 47 lines 1056-1057: Please consider changing the language to read: "<u>One example of flow alterations that have occurred in the Delta can be seen in Old and Middle River flows in the central Delta. Net flows in Old and Middle Rivers (OMR) have been the</u>

primary focus of research and management related to operation of the CVP/SWP facilities; however, it should be noted that there are other metrics such as QWest and a flow index[1] that have been used successfully to evaluate flows and hydrology in the central and south Delta as they relate to the protection of endangered species".

Page 49 lines 1087-1088: The report states "*[c]urrent management provisions to protect delta smelt (UFWS 2008) are aimed at keeping this ratio at no more than the average of the 2006-8 levels*". The report would be improved by an evaluation of these management efforts to achieve the described goal.

Page 86 lines 1909 – 1923: This section could be improved by attempting to more clearly separate mechanisms that affected measured salvage and loss of adult smelt due to entrainment.

Page 87 lines 1936- 1939: The conclusions reached in this section would be more robustly supported by including a quantitative analysis of measured data to test driving mechanism rather than just a qualitative comparison between OMR and salvage for the years considered.

Page 101 lines 2244: OMR flows are a questionable surrogate for larvae entrainment at export facilities for several reasons: 1) larval entrainment is not monitored at the export facilities so it is not possible to test the hypothesis, 2) entrainment depends on multiple factors, particularly larvae distance from export facilities. Particle tracking models could be used to estimate larval entrainment for the four years considered and particle release locations for the simulations could be based on observed larvae. CCWD has performed particle tracking simulations that demonstrate OMR is not necessarily an appropriate predictor of entrainment; the modeling are available as part of the public record[2].

[1] http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/wrkshp2/dsereno.pdf
[2] http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/wrkshp2/dsereno.pdf